

1. An inkjet assembly comprising:

a vented ink reservoir for containing a liquid ink therein, the vented ink reservoir defining an internal volume occupied at least in part by a semipermeable membrane in fluid communication with a vent that automatically adjusts for pressure differentials by enabling gaseous diffusion between an environment external to the vented ink reservoir and the internal volume of the vented ink reservoir, while inhibiting liquid diffusion therethrough.

2. The inkjet assembly of claim 1, wherein at least a portion of the semipermeable membrane is adapted to be above a highest level of the liquid ink within the internal volume of the vented ink reservoir.

3. The inkjet assembly of claim 1, wherein the semipermeable membrane is operatively coupled to the ink reservoir by impulse sealing.

4. The inkjet assembly of claim 1, wherein the semipermeable membrane includes polytetrafluoroethylene.

5. The inkjet assembly of claim 1, wherein the semipermeable membrane defines a non-circular gaseous throughput.

6. The inkjet assembly of claim 5, wherein the semipermeable membrane is angled with respect to a level of ink within the ink reservoir.

7. The inkjet assembly of claim 1, wherein the semipermeable membrane includes a cross-sectional area for gaseous throughput ranging from between about 0.5 cm² to about 6 cm².

8. The inkjet assembly of claim 1, wherein:

the vented ink reservoir includes a cap mounted to a tank; and
the semipermeable membrane is mounted to the cap.

9. The inkjet assembly of claim 8, wherein:

the cap includes a raised hump providing a space adapted to trap gas therein above a highest level of liquid ink within the vented ink reservoir; and

at least a portion of the semipermeable membrane extends into the space provided by the raised hump.

10. The inkjet assembly of claim 8, wherein a bottom surface of the cap partially defining the internal volume includes a downwardly extending closed wall seating the semipermeable membrane thereto to define a gaseous cavity within the internal volume.

11. The inkjet assembly of claim 8, wherein:

a bottom surface of the cap includes a downwardly extending closed wall to which the semipermeable membrane is mounted thereto to define a gaseous cavity within the internal volume; and

a top surface of the cap includes a humped portion corresponding to a raised space within the bottom surface of the cap adapted to be occupied by a trapped gas, where at least a portion of the semipermeable membrane is in gaseous communication with the trapped gas.

12. The inkjet assembly of claim 11, wherein the gaseous cavity formed by the downwardly extending closed wall occupies a portion of the raised space.

13. The inkjet assembly of claim 8, wherein the cap includes an ink inlet adapted to be in fluid communication with the internal volume of the vented ink reservoir.

14. The inkjet assembly of claim 8, wherein the cap includes a serpentine tunnel extending therealong in fluid communication with the vent.

15. A method of regulating the pressure between an interior volume of an ink container and an external environment, the method comprising the steps of:

positioning a semipermeable membrane within an ink container, the semipermeable membrane including a first surface in fluid communication with an interior volume of the ink container and an opposing surface in fluid communication with an external environment;

mounting the semipermeable membrane to the ink container; and

regulating a pressure differential between the interior volume and the external environment automatically and concurrently by facilitating gaseous diffusion and inhibiting liquid diffusion across the semipermeable membrane.

16. The method of claim 15, wherein:

the interior volume is occupied by, at least in part, a liquid ink; and

at least a portion of the semipermeable membrane is positioned above a highest level of the liquid ink within the interior volume.

17. The method of claim 15, wherein:

the interior volume is occupied by, at least in part, a liquid ink; and

the semipermeable membrane is angled with respect to a level of the liquid ink within the interior volume.

18. The method of claim 15, wherein the semipermeable membrane is operative to facilitate gaseous diffusion while the first surface is in concurrent fluid communication with a liquid ink and a gas.

19. The method of claim 15, wherein a surface area available for gaseous diffusion through the semipermeable membrane is non-circular.

20. The method of claim 15, further comprising the step of reducing an amount of ink vapor leaving the interior volume of the ink container by reducing a volumetric flow of gas passing in proximity to the opposing surface of the semipermeable membrane.

21. The method of claim 23, wherein the regulating step includes providing a serpentine passageway for gaseous travel, wherein the serpentine passageway includes a first end terminating approximate the opposing surface of the semipermeable membrane and a second end terminating approximate the external environment.

22. The method of claim 15, wherein the semipermeable membrane includes polytetrafluoroethylene.

23. The method of claim 15, wherein the semipermeable membrane includes a cross sectional area for gaseous exchange ranging from about 0.5 cm² to about 6 cm².

24. The method of claim 15, wherein the mounting step includes the step of sealing the semipermeable membrane to the ink container by impulse sealing.

25. A method of mounting a porous substrate, concurrently inhibiting liquid diffusion therethrough and enabling gaseous diffusion therethrough, to a nonporous substrate concurrently inhibiting gaseous and liquid diffusion therethrough, the method comprising the steps of:

positioning a porous substrate adjacent to a nonporous substrate;

moving a pressure source adjacent to the porous substrate to sandwich the porous substrate between the pressure source and the nonporous substrate;

applying thermal energy in a pulse adjacent to the porous substrate to melt a portion of the nonporous substrate; and

removing the thermal energy source to solidify the portion of the nonporous substrate, interlocking the porous substrate and nonporous substrate to inhibit fluid communication therebetween;

wherein the porous substrate facilitates gaseous diffusion therethrough, but inhibits liquid diffusion therethrough.

26. An ink reservoir cap adapted to be mounted to an ink tank to provide a vented ink reservoir automatically regulating the internal pressure therein, the ink reservoir cap comprising:

a cap body adapted to be mounted to an ink tank to provide a vented ink reservoir, the cap body and ink tank define an interior volume available for ink occupation with the cap body seating a semipermeable membrane over a vent extending therethrough, the membrane is housed within the interior volume to provide gaseous communication, but restrict liquid communication, between an external environment and the interior volume of the vented ink reservoir.

27. The ink reservoir cap of claim 26, wherein the cap body further includes a filler conduit adapted provide fluid communication between an ink source and the interior volume of the vented ink reservoir.

28. The ink reservoir cap of claim 26, wherein the cap body further includes a raised space in fluid communication with the semipermeable membrane, the raised space adapted to trap a volume of gas above a highest level of liquid ink within the vented ink reservoir.

29. The ink reservoir cap of claim 28, wherein at least a portion of the semipermeable membrane is adapted to be in gaseous communication with gas within the raised space.

30. The ink reservoir cap of claim 26, wherein the cap body further includes a plurality of alignment pins adapted to align the cap body with respect to the ink tank prior to mounting the cap body onto the ink tank.

31. The ink reservoir cap of claim 26, wherein the cap body and the ink tank include a channel and a corresponding rib adapted to interact with the channel to provide an interface adapted to be fluidically sealed and provide a vented ink reservoir.